

### **REMARKS/ARGUMENTS**

The present Amendment is in response to the Office Action having a mailing date of June 12, 2003. Claims 1-14 are pending in the present Application. Applicant has amended claims 1, 5, 6, 8, 12, and 13. Consequently, claims 1-14 remain pending in the present Application.

In the above-identified Office Action, the Examiner indicated that claims 5 and 12 would be allowable if amended to be in independent form incorporating the limitations of the base claims and any intervening claims. Applicant gratefully appreciates the Examiner's indication that claims 5 and 12 include allowable subject matter.

Applicant has amended claims 5 and 12 to be in independent form incorporating the limitations of the base claim and any intervening claims. Accordingly, Applicant respectfully submits that claims 5 and 12 are allowable as currently presented.

Applicant has amended claims 1, 5, 6, 8, 12, and 13. Applicant has amended claims 1 and 8 to recite that the optical signal has a beam separation angle, that the beam deflector has an index of refraction ( $n$ ) and a first angle ( $\alpha$ ). Applicant has also amended claims 1 and 8 to recite that the beam separation angle, ( $\beta$ ) and a first angle ( $\alpha$ ) of the beam deflector obey the relationship  $\beta = \sin^{-1}(n \cdot \sin\{\alpha - (1/n)\sin^{-1}[\sin(2\alpha - \sin^{-1}(n \cdot \sin\alpha))]\})$ . Support for the amendment can be found in Equation (1) of the present application. Applicant has amended claims 5 and 12 to be in independent form and incorporate the limitations of the base claim and any intervening claims. Applicant respectfully submits that the amendments to claims 5 and 12 do not alter the scope of claims 5 and 12. Applicant has amended claims 6 and 13 to replace the term "mirror" with the term "reflector" in order to harmonize claims 6 and 13 with base claims 1 and 8, respectively. Applicant respectfully submits that the amendments to claims 6 and 13 do not narrow the scope of claims 6 and 13. Furthermore, Applicant respectfully submits that no new matter is added.

In the above-identified Office Action, the Examiner rejected claims 6 and 13 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner also rejected claims 1-4, 6-11, 13, and 13 under 35 U.S.C. § 103 as being obvious in light of Japanese patent Application Publication JP 2001272612A (Nosaka) in view of U.S. Patent No. 6,477,289 (Li).

In the above-identified Office Action, the Examiner rejected claims 6 and 13 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner found that the term "mirror" did not have proper antecedent bases.

Claims 6 and 13 have been amended to replace the term "mirror" with the term "reflector," which has proper antecedent basis. Accordingly, Applicant respectfully submits that claims 6 and 13 are clear and definite.

The Examiner also rejected claims 1-4, 6-11, 13, and 13 under 35 U.S.C. § 103 as being obvious in light of Nosaka in view of Li.

Applicant respectfully traverses the Examiner's rejection. Independent claim 1 recites an optical switch including a triple fiber collimator, a beam deflector and a reflector. The optical signal travels through the first portion of the beam deflector, is reflected by the reflector and is output over the second fiber when the beam deflector is in a first position. The optical signal travels through the second portion of the beam deflector, is reflected by the reflector and is output over the third fiber when the beam deflector is in a second position. Furthermore, the optical signal has a beam separation angle between a beam incident upon the reflector and a beam reflected by the reflector. The beam deflector has an index of refraction (n) and a first

angle ( $\alpha$ ), wherein the beam separation angle, ( $\beta$ ) and a first angle ( $\alpha$ ) of the beam deflector obey the relationship  $\beta = \sin^{-1}(n \cdot \sin\{\alpha - (1/n)\sin^{-1}[\sin(2\alpha - \sin^{-1}(n \cdot \sin\alpha))]\})$ . Independent claim 8 recites an analogous method claim.

Thus, claims 1 and 8 not only recite the use of a beam deflector in an optical switch, but also specify the relationship between the beam separation angle of the optical signal and the first angle of the beam deflector.

In contract, neither Nosaka nor Li teaches or suggest the optical switch and method recited in claims 1 and 8, respectively. Nosaka does describe an optical switch employing a wedge 21. However, Applicant can find no mention in the cited portion of Nosaka of a beam deflector having a first angle that is selected based on the index of refraction and the angle of the beams. More specifically, Applicant can find no mention that the beam separation and first angle of the beam deflector meet the relationship  $\beta = \sin^{-1}(n \cdot \sin\{\alpha - (1/n)\sin^{-1}[\sin(2\alpha - \sin^{-1}(n \cdot \sin\alpha))]\})$  in Nosaka.

Li fails to remedy the defects of Nosaka. Although Li also describes the use of a beam deflector in the optical switch, Applicant has found no mention in the cited portions of Li of utilizing a beam deflector having a first angle that is selected based on the index of refraction and the angle of the beams. More particularly, Applicant can find no mention that the beam separation and first angle of the beam deflector meet the relationship  $\beta = \sin^{-1}(n \cdot \sin\{\alpha - (1/n)\sin^{-1}[\sin(2\alpha - \sin^{-1}(n \cdot \sin\alpha))]\})$  in Li. Because neither Nosaka nor Li describe the recited beam deflector and optical switch, the combination of Nosaka and Li also fails to teach or suggest the recited optical switch and method. Accordingly, Applicant respectfully submits that claims 1 and 8 are allowable over the cited references.

Claims 2-4 and 6-7 depend upon independent claim 1. Claims 9-11 and 13-16 depend upon independent claim 8. Consequently, the arguments herein apply with full force to claims 2-4, 6-7, 9-11, and 13-16. Accordingly, Applicant respectfully submits that claims 2-4, 6-7, 9-11, and 13-16 are allowable over the cited references.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

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September 12, 2003  
Date